REMARKS

The Office Action mailed December 27, 2010 has been reviewed and carefully considered. No new matter has been added.

Claims 1, 17, and 33 have been amended. New Claims 34-36 have been added. Claims 1-36 are pending.

Claims 1-5, 11-21, and 27-33 stand rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent Publication No. 2002/0136297 to Shimada et al. (hereinafter "Shimada"). Claims 6-10 and 22-26 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Shimada in view of U.S. Patent Publication No. 2006/0171454 to Jung (hereinafter "Jung"). The rejections are respectfully traversed.

The independent claims currently pending are Claims 1, 17, and 33. As noted above, Claims 1, 17, and 33 have been amended. Support for the amendments may be found all throughout the instant application, where "QP" is used to denote quantization parameter (i.e., the variable used to scale transform coefficient levels, as readily known and understood by one of skill in the art), while simply "Q" is used to denote quantization step size (i.e., the difference between one quantization parameter and another quantization parameter, as readily known and understood by one of skill in the art). Such definition of QP is obtained from the "Definitions" section of the MPEG-4 AVC Standard (also referred to as the H.264 standard, namely ISO/IEC 14496-10), although the same is not included herewith as such definition is very well known to those of ordinary skill in the art.

It is respectfully asserted that none of the cited references, either taken singly or in combination, teach or suggest the following limitations now recited in amended Claim 1 (emphasis added):

> means for generating a quantization parameter (QP) estimate for the macroblocks of an image frame; and
>
> means for selection of a frame level QP for the image frame, using mode of QP estimates for the macroblocks,
>
> wherein the QP estimates for the macroblocks and the frame level QP for the image frame respectively correspond to variables used to scale transform coefficient levels.

Moreover, it is respectfully asserted that none of the cited references, either taken singly or in combination, teach or suggest the following limitations now recited in amended Claim 17 (emphasis added):

> generating a quantization parameter (QP) estimate for the macroblocks of an image frame; and
>
> selecting a frame level QP for the image frame, using mode of QP estimates for the macroblocks,
>
> wherein the QP estimates for the macroblocks and the frame level QP for the image frame respectively correspond to variables used to scale transform coefficient levels.

Further, it is respectfully asserted that none of the cited references, either taken singly or in combination, teach or suggest the following limitations now recited in amended Claim 33 (emphasis added):

> A video encoder for encoding image frames that are divisible into macroblocks comprising a quantizer for generating a quantization parameter (QP) estimate for the macroblocks of an image frame and for selection of a frame level QP for the image frame, using one of mean, median, and mode of QP estimates for the macroblocks, wherein the QP estimates for the macroblocks and the frame level

QP for the image frame respectively correspond to variables used to scale transform coefficient levels.

Against the previous limitations of Claims 1, 17, and 33, the Examiner cited Shimada, reasoning as follows:

> As per claim 1, Shimada discloses a video encoder for encoding image frames that are divisible into macroblocks, comprising: means for generating a quantization parameter (QP) estimate for the macroblocks of an image frame; and means for selection of a frame level QP for the image frame, using one of mean, median, and mode of QP estimates for the macroblocks (Figure 1 element 14; paragraph [0056] lines 1-6).

Paragraph [0056] of Shimada is reproduced in its entirety (inclusive of lines 1-6) as follows:

> When setting the quantiser step size for each macroblock of a picture to be encoded, which is a second unit to be encoded, the encoding control unit 14 initially sets the target quantiser step size for the first macroblock to be encoded first in the current picture to the target quantiser step size set for the picture type of that picture. Each time the encoding unit 6 encodes the next macroblock, the encoding control unit 14 updates the quantiser step size to be used for encoding the next macroblock. The encoding control unit 14 further controls the updating so that the average of the quantiser step sizes used or to be used for encoding all macroblocks included in the current picture currently being encoded finally approaches the target quantiser step size set for the picture type of the current picture. By virtue of the control operation performed by the encoding control unit 14, the amount of codes generated when encoding each picture in the GOP can fall in a predetermined range with its target value for the amount of generated codes as the center of the predetermined range.

Thus, one difference between Claims 1, 17, and 33 and Shimada is that Claims 1, 17, and 33 involve quantization parameter estimates while Shimada involves quantizer step sizes. However, as is readily apparent to one of ordinary skill in the art, a quantization parameter estimate is not a quantizer step size. For example, and as now explicitly recited in Claims 1, 17, and 33, a quantization parameter (and quantization parameter estimate for that matter) is a variable used to scale transform coefficient levels, while a quantizer step size is a difference between one quantization parameter and another quantization parameter. Hence, a quantizer step size is never (nor can be) used to scale a transform coefficient, as it is simply a difference measure from one quantization parameter to the next and not the actual variable used to perform the scaling. Moreover, the use of a difference measure from one quantization parameter to the next (i.e., a quantization step size), without more as per the teachings the Shimada, certainly does not teach or suggest the use of the variable used to scale a transform coefficient (i.e., a quantization parameter) as recited in Claims 1, 17, and 33. Thus, right at the onset, the cited portion of Shimada fails to teach or suggest the above reproduced limitations of Claims 1, 17, and 33.

Another three differences between Claims 1, 17, and 33 and Shimada are as follows and pertain to the frame level quantization level parameter for the frame being selected using **mode** of the quantization parameter estimates **for the macroblocks in that frame** as recited in Claims 1, 17, and 33, while in Shimada (see cited paragraph [0056] reproduced above) the quantizer step sizes are updated so that the average of the quantization step sizes used for encoding all macroblocks in the current picture finally approach **a target quantizer step size** set **for the picture type for the current picture**.

First, and as argued above more fully above, a quantization parameter as explicitly recited in Claims 1, 17, and 33 is NOT a quantization step size as disclosed in Shimada. Thus, Shimada fails to teach the aforementioned limitation of Claims 1, 17, and 33.

Second, while Claims 1, 17, and 33 recite that the frame level QP is selected using **mode of QP estimates** for the macroblocks, Shimada explicitly and only discloses using **the average of all quantizer step sizes** (to approach the target quantizer step size set for the picture type of the current

picture). However, a mode of QP estimates as recited in Claims 1, 17, and 33 is NOT an average of (all) quantizer step sizes as disclosed in Shimada. Thus, Shimada fails to teach the aforementioned limitation of Claims 1, 17, and 33.

Third, while Claims 1, 17, and 33 are **selecting** the frame level QP (using mode of QP estimates), Shimada is updating the quantizer step sizes (for all macroblocks in the current picture) to finally approach the target quantizer step size (set for the picture type of the current picture), where the target quantizer step size for the picture type is clearly **already selected**. Otherwise how could the quantizer step size set for the picture type of the current picture be even used in order to control the updating of the quantization step sizes for all of the macroblocks (so that the average of the quantization step sizes for encoding all macroblocks in the current picture finally approach the target quantizer step size set for the picture type of the current picture) as explicitly disclosed in cited paragraph [0056] of Shimada. Thus, Shimada fails to teach the aforementioned limitation of Claims 1, 17, and 33.

Hence, Shimada does not teach or suggest all the above reproduced limitations of Claims 1, 17, and 33. Moreover, we note that remaining reference Jung does not cure the deficiencies of Shimada, and is silent regarding the above reproduced limitations of Claims 1, 17, and 33.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." MPEP §2131, citing *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

The failure of an asserted combination to teach or suggest each and every feature of a claim remains fatal to an obviousness rejection under 35 U.S.C. § 103. Section 2143.03 of the MPEP requires the "consideration" of every claim feature in an obviousness determination. To render a claim unpatentable, however, the Office must do more than merely "consider" each and every feature for this claim. Instead, the asserted combination of the patents must also teach or suggest *each and every claim feature*. *See In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA

1974) (emphasis added) (to establish *prima facie* obviousness of a claimed invention, all the claim features must be taught or suggested by the prior art). Indeed, as the Board of Patent Appeal and Interferences has recently confirmed, a proper obviousness determination requires that an Examiner make "a searching comparison of the claimed invention - *including all its limitations* - with the teaching of the prior art." *See In re Wada and Murph*y, Appeal 2007-3733, *citing In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995) (emphasis in original). "If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious" (MPEP §2143.03, citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)).

Since the Examiner has not shown all of the claimed elements to be taught, suggested, described, or otherwise disclosed in any combination of the cited references, a prima facie rejection has not properly been made.

Hence, Claims 1, 17, and 33 are patentably distinct and non-obvious over the cited references for at least the reasons set forth above.

Claims 2-16 and 18-32 directly or indirectly depend from Claims 1 and 17, respectively, and thus include all the limitations of Claims 1 and 17, respectively. Accordingly, Claims 2-16 and 18-32 are patentably distinct and non-obvious over the cited references for at least the reasons set forth above with respect to Claims 1 and 17, respectively.

Moreover, said dependent claims include patentable subject matter in and of themselves and are, thus, patentable distinct and non-obvious over the cited references in their own right. For example, none of the cited references, either taken singly or in any combination, teach or suggest the following limitations of Claims 5 and 21: "wherein said macroblock QP calculator adjusts the individual macroblock QPs …to achieve lower mean square errors for the Inter-coded pictures than for the Intra-coded pictures." For example, mean square error does not occur even once in Shimada, or any variation thereof, let alone the remaining limitations corresponding thereto recited in Claims 5 and 21. Preserving more details in I-pictures versus P-pictures, as

allegedly disclosed in Shimada by the Examiner is done by simply using more code as admitted by the Examiner on page 4 of the Office Action and does not teach or even remotely suggest achieving lower mean square errors for Inter-coded pictures than for Intra-coded pictures as explicitly recited in Claims 5 and 21. In fact, the alleged teachings of Shimada actually teach away from the explicit limitations of Claims 5 and 21, as preserving more details in I-pictures versus P-pictures as allegedly disclosed in Shimada by the Examiner would seem to warrant a lower mse (mean square error) for I-pictures to ensure such preservation of additional details in I-pictures versus P-pictures. While note that while only Shimada was cited against Claims 5 and 21, Jung does not cure the deficiencies of Shimada in this regard and is silent regarding the same. For example, while Jung discloses mse, Jung is completely silent regarding the remaining limitations of Claims 5 and 21 pertaining to achieving lower mean square errors for Inter-coded pictures than for Intra-coded pictures.

Reconsideration of the rejections is respectfully requested.

Moreover, as noted above, new Claims 34-36 have been added. Support for the same may be found at least in originally filed Claims 1, 17, and 33.

In view of the foregoing, Applicants respectfully request that the rejections of the claims set forth in the Office Action of December 27, 2010 be withdrawn, that the pending claims be allowed, and that the case proceed to early issuance of Letters Patent in due course.

The fee of **$810** required by 37 C.F.R. §1.17(e) for the filing of a Request for Continued Examination (RCE) under 37 C.F.R. §1.114 as well as the addition of three new dependent claims is authorized. It is believed that no further additional fees or charges are currently due. However, in the event that any additional fees or charges are required at this time in connection with the application, they may be charged to applicants' Deposit Account No. 07-0832.

Respectfully submitted,

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Date: February 3, 2011